SECTION 111233 – AUTOMATED PARKING ACCESS AND REVENUE CONTROL SYSTEM (PARCS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. None.

1.2 REFERENCES

A. List of Abbreviations:
   1. ADA    Americans With Disabilities Act
   2. DSS    Data Security Standards
   3. EMV    Chip-Card Payments (originally Europay, MasterCard and Visa)
   4. FMS    Facility Management System
   5. ID     Identification
   6. LAT    Lane Acceptance Test
   7. NEMA   National Electrical Manufacturing Association
   8. NFC    Near Field Communication
   9. PARCS  Parking Access and Revenue Control System
  10. PCI    Payment Card Industry
  11. PIL    Pay in Lane Automated Payment Machine
  12. POF    Pay on Foot Automated Payment Machine
  13. PROX   Proximity Reader
  14. PMCS   Preventive Maintenance Checks and Services
  15. RAID   Redundant Array of Independent Disks
  16. RF     Radio Frequency
  17. SAT    System Acceptance Test
  18. UPS    Uninterruptible Power Supply

1.3 SUMMARY

A. Section includes provision of all material, labor, equipment, services and training necessary to furnish and install fully integrated on-line, real-time Parking Access and Revenue Control System (PARCS) functioning as described herein.

B. Related Requirements: None

C. System Description

1. This specification describes a hypothetical new-construction garage for use by the City of Des Moines (“City”) in selecting a preferred PARCS vendor. No items are being purchased as part of this RFQ. All requirements and assumptions herein are for the purpose of allowing an informed response to the RFQ.
2. The use of the facility is assumed to be mixed contract and transient pay-parking with a single entrance lane, a single exit lane and a single POF. The system is fully automated, not utilizing any cashiers.

3. Contract parkers use a proximity card to enter and exit the facility. The proximity readers are mounted on or integrated into the respective Exit Station and Entrance Station.

4. Transient parkers may pull a ticket from the Entrance Station upon entrance and pay with a credit card (no cash) using the Exit Station. Alternatively, a parker may pay with cash or credit card at the POF and use the paid ticket as an exit credential.

5. Rather than taking a ticket at the Entrance Station, transient parkers may instead choose to present their credit card at the Entrance Station and again for payment at the Exit Station. No ticket is used in this process.

6. The City’s goal is to reduce operating expenses by eliminating cashiers but maintaining smooth traffic flow 24/7/365 days per year.

7. For this PARCS, assume the following:
   a. Conduits are properly placed by others on concrete islands with live data and power connections for Exit Station, Entrance Station. The PARCS vendor is required to make final connections, only. Conduits are also present for interconnect to the barrier gate.
   b. Two detector loops need to be sawed and connected to the PARCS equipment in the lane. Assume the drive surface is concrete and that no subsurface metal detection is required. An alternate detection technology may be utilized if it achieves the same level of function.
   c. A typical metal bollard is installed ahead of each Entrance Station, Exit Station and barrier gate (i.e. two per drive lane).
   d. The drive lanes are closed to auto traffic during installation and can be worked on during standard business hours.
   e. The POF has data and power connections available requiring only final connection. The POF is located in a typical parking structure elevator lobby that is enclosed and water-tight, but not otherwise climate controlled.
   f. Climate conditions shall be that of year-round operation in Des Moines, IA.
   g. A climate-controlled office space is available for placement of all servers and a single management station. Power and data connections are in-place by others.
   h. PARCS vendor shall provide recommended power conditioning for all PARCS equipment, and, in addition, a UPS function for the servers and management station.
   i. All data connections use Cat5e Ethernet cabling with 100mps Ethernet network switches in place by others.
   j. All power is 120VAC, 60hz, with 20amp service.
   k. A high-speed Ethernet gateway is in place by others to accommodate payment processing and remote support.
   l. PARCS vendor to provide any network security devices to allow installation per the system’s current PA-DSS Implementation Guide.
   m. All necessary components and materials for a complete and functioning system.

D. Usage Volumes: Transactions for subsystems are projected to reach the following annual volumes:
1. Revenue Control System: 900,000 transactions per year.
2. Access Control System: 5,000 cards in circulation; 1,000,000 transactions per year.

E. System Design:

1. FMS consisting of server, task or subsystem computers and workstations providing on-line monitoring and control of all PARCS devices. Through information generated by system reports, a complete FMS capable of:

   b. Reconciling time parked with revenue generated.
   c. Providing independent and consolidated occupancy and activity counts for both Revenue Control System and Access Control System.
   d. Monitoring all lane equipment.

2. Access Control System for regular (‘monthly’) parkers who prearrange parking and utilize Proximity Cards to enter and exit.

3. Revenue Control System for ‘transient’ parkers who pull a ticket to enter and process the ticket and pay a fee to exit, including a validation system to reduce or eliminate fees.

F. Lane Configuration

1. Entrance Plaza – 1 entry lane equipped with Entrance Station, including:

   a. Ticket dispenser.
   b. Credit card reader.
   c. Barcode reader.
   d. Proximity card reader
   e. Intercom.
   f. Auto gate with inductive loops.
   g. Protective bollards.

2. Exit Plaza – 1 exit lane equipped with Exit Station, including:

   a. Ticket verifier.
   b. PIL
   c. Credit card reader.
   d. Barcode reader.
   e. Intercom.
   f. Auto gate with inductive loops.
   g. Traffic controller sign.
   h. Protective bollards.

1.4 DESIGN CRITERIA

A. Accuracy: Provide the following minimum accuracy levels. Calculate accuracy by dividing the accurate counts/calculations by all counts/calculation.
1. Ticket reading: 99.5%
2. Fee calculation: 99.5%
3. Transaction counts: 99.5%
4. Exception counts: 99.5%
5. Revenue amounts: 100%
6. Data received and accepted by computer system as valid: 100%
7. Data transmission: Less than one message re-transmission per hour.

B. Equipment Construction: Design and construct all components and equipment with the following:

1. Durable vandal and weather resistant cabinets, which are able to maintain finish, look, integrity and functionality in the environment in which installed for a period of ten years.
   a. Mounting holes accessible only from inside of cabinets.
   b. Hinged cabinet doors that swing clear of bollards, walls, columns and any other obstructions.
   c. Modular internal components, to extent practical, for easy maintenance and replacement.
2. Corrosion resistant connection boxes for all wiring connections.
3. Control logic and communication capability as necessary and required herein.
4. Compatible communication ports for all communications and connections.
5. Crystal controlled time clock/calendar that is updated at least once daily by FMS and accurate to one minute per ninety days for all primary components.

C. User Interface: Design and construct the user interface with the following:

1. Ergonomically designed devices and user interface for ease of use by patrons.
2. POFs meet the latest ADA requirements, including but not limited to reach ranges, visibility of display screens, clear floor or ground space, and operable parts.

D. Communication:

1. All applicable components are microprocessor controlled, in on-line, virtual real-time communication with FMS.
2. All transaction data sent to FMS immediately, with communications hierarchy appropriate to need for action or response from another component, feature or subsystem.
3. All transaction data is available to FMS workstations within one minute of completing transaction at any device. Delays or functional degradation resulting from data communication between devices over FMS network is not acceptable.
4. Each primary component communicates complete transaction log to FMS. In event of communication failure, devices continue to operate in off-line mode and store a minimum of 5,000 transactions, or have sufficient system redundancy, to insure availability of transaction data upon restoration of FMS. In event of failure during communication, an error-checking and recovery routine is employed to prevent corruption of data files.
E. Future System Expansion:
   1. Readily expandable to accommodate additional parking facilities, features and configurations.

1.5 PRICE REQUIREMENTS

A. Price includes the provision of all material, labor, equipment, and services necessary to furnish and install fully integrated PARCS as outlined herein.

B. Add Alternatives: Provide prices for the following Alternates on Price Form:
   1. Maintenance and Service Contract after Warranty:
      a. A separate contract awarded for Maintenance and Service after expiration of the warranty.
      b. This Contract may be executed directly with a party designated and approved by manufacturer(s) to maintain and service PARCS equipment.
      c. Contract would commence with expiration of one-year warranty period.
      d. Provide estimated annual pricing for five years in the Price Proposal Form.

C. Power and Communication
   1. Assume all locations are ready to accept PARCS equipment including power and data connections.
   2. Include all required power conditioners in proposal amount if PARCS or any component thereof requires power differing from that specified.

1.6 PROPOSAL SUBMITTALS - TO BE INCLUDED WITH RESPONSE

A. Price Form: Total PARCS cost and unit cost of each component.

B. Complete and submit Specification Compliance Form.

C. Product Data:
   1. Product description for each component including the following:
      a. Detail of user interface.
      b. Operating temperature and humidity ranges.
      c. Housing material and access panel location.
      d. Mounting requirements.
      e. Electric power requirements
   2. Description of the FMS software and hardware including the following:
      a. Configuration diagram.
      b. Software platforms and programming language.
c. Communication protocol, polling procedures and transaction message flow from peripheral devices to and through FMS.
d. Communication failure/error identification and recovery.
e. Fault tolerance.
f. Back-up procedures.
g. Data storage and retrieval procedures.

D. Exceptions and Substitutions:
   1. Provide an all-inclusive list of any and all exceptions taken to any part or parts of this document.
   2. Substitutions: It is recognized that there are variations in equipment between manufacturers. Where functional performance, features or quality of system varies materially from that specified, submit Request for Substitution form identifying substitution being proposed. This submittal may be accompanied by catalog sheets, brochures, and technical specifications of the proposed system.
   3. Exceptions: Provide an all-inclusive list of any and all exceptions taken to any part or parts of this document (including substitutions).

E. Installation Schedule:
   1. Provide a hypothetical schedule for installation with major milestones and lead times identified using the assumptions and requirements herein that represents typical progress and assuming no delays caused by dependent tasks by others.

F. List manufacturer of each primary component of system.

G. Manufacturer’s Qualifications:
   1. In continuous operations for previous five years.
   2. Primary components installed in three or more parking systems of similar size and complexity. Provide the following for each installation.
      a. Name of project.
      b. Location.
      c. Contact name, telephone number and email address.
      d. Date of installation.
      e. Number of lanes.
      f. Description of equipment and quantities.

H. Installer Qualifications:
   1. Proven ability to install equipment and provide appropriate and required service and support after installation.
   2. Continuously worked with equipment manufacturer, including providing installations and maintenance, for minimum of three years.
   3. Approved in writing by PARCS manufacturer(s).
   4. Documentation of manufacturer’s installation training within previous two years.
   5. Three comparable installations in parking systems of similar size and complexity in past three years. Provide the following for each installation.
a. Name of project.
b. Location.
c. Contact name, telephone number and email address.
d. Date of installation.
e. Number of lanes.
f. Description of equipment and quantities.

6. Manufacturer approved service center located within two hours driving distance of site.

I. List of sub-contractors, identifying nature of work performed.

J. List of manufacturer recommended spare parts specific to this installation, including:

1. Part name.
2. Part number.
3. Unit price.
4. Quantity.
5. Total Cost.

K. Warranty:

1. Submit copy of warranty (per Section 1.10 of this document) and explanation of any instances which may impact warranty coverage.
2. Submit RMA procedures.

L. Service and Maintenance:

1. List physical location(s) of trained personnel who may be dispatched to offer warranty or post-warranty maintenance and service.
2. State whether any all spare parts from “J” will be stocked, in addition to that provided to the site.
3. State number of years installer has continuously provided service to the Des Moines area.
4. List average amount of down-time when awaiting a repair.

M. Add Alternates: Provide detailed descriptions, inclusions and exclusions of Add Alternates as outlined in Section 1.4 above.

N. Samples: Submit samples of tickets, reports, and other items to be selected by Owner with this RFQ.

O. Operating Documentation: Deliver one hard copy and one electronic copy of operations manuals, maintenance and administration manuals.

P. Deliver a typical Training Plan. Include at a minimum, a description of all training courses including identification of instructional outcome, duration of course, and type of presentations.

1.7 SITE CONDITION ASSUMPTIONS
A. Operate and function as intended under the local climate and weather conditions, including but not limited to temperature extremes, wind, salt, dust, and precipitation.

B. Islands at gated lanes must not be poured until stub ups and anchor bolts are properly placed and any conflicts with installation at particular lane location are resolved.

C. Power and Wiring

1. City will provide and install power wiring and conduit to islands as specified.
2. Provide and install all necessary device control wiring, communications wiring and additional power wiring required by system. Include special electrical power and grounding.
3. Provide and install any power conditioning that is required for the operation of the system. **Power provided for this Project is 120 VAC +/- 10% and 60 Hz from circuits dedicated to PARCS.**
4. Terminate and connect all communications cabling.
5. Provide and install on-line, regulating computer grade UPS for:
   a. Servers, workstations and task computers (system controllers) with 30 minutes of back-up battery power.

1.8 WARRANTY

A. General: Equipment and installation (100% parts and labor) for a minimum of one year from date of final acceptance. System maintained and serviced against any and all malfunctions due to manufacturing or installation defects at no cost to Owner during warranty period, including preventive maintenance per manufacturer's recommendations or as necessary to keep equipment in good working order.

1. Warranty period commences after Offeror has demonstrated satisfactory performance of completed PARCS.
2. Maintain a log of all maintenance, preventive maintenance and repair work performed under warranty and provide to Owner or Owner's representative on monthly basis and at end of warranty period.

B. Warranty response period:

1. Monday through Friday, 8:00 am to 5:00 pm excluding holidays.
2. Response time from initiation of trouble call to remote online response (where appropriate) by qualified service technician cannot exceed four hours.
3. Response time from initiation of trouble call to on-site response by qualified service technician cannot exceed four hours.
4. Repair or replace all defective or damaged items under warranty by end of the following calendar day on which notice was given.

C. If Contractor is not available, vendor’s authorized representative may perform repairs. Pre-qualified maintenance staff should also perform repairs and identify types of repair each trained individual is qualified to perform without impacting terms of warranty.
D. Replace items taken from spare parts inventory during warranty period at no additional cost to Owner.

E. Preventive Maintenance: Provide a schedule and task list for preventive maintenance services to be provided by on-site staff. Include maintenance services such as cleaning, lubricating, checking all connections, and to assure basic unit operations.

F. Install all software updates, patches and upgrades applicable to this system during warranty period at no additional cost.

PART 2 - PRODUCTS

2.1 FACILITY MANAGEMENT SYSTEM

A. User Interface:

1. Capable of operating across Owner’s Local Area Network (LAN), accessible, with proper user ID and password, to all authorized users’ workstations with installed FMS software modules on Owner’s LAN.
2. Provide field programmable functions of each device from FMS (password protected), including rate structures (from FMS only), with any and all programming changes reported in daily log.
3. Maintain a secure connection while active, and automatically log-off after programmable period of inactivity.
4. Remote access to FMS over standard TCP/IP connection (may use web browser-based applications).
5. Browser-based user-interface modules utilize client/server technology or equivalent. The following general requirements apply to all components or modules:
   a. Windows-based graphical user interface.
   b. Allow for both standard and custom report formats.
   c. Adequate security to allow for different classifications of users.

B. Computer System:

1. Provide and install server/host computer in a lockable rack, off the ground and protected from dust and debris. An Internet-hosted or cloud-hosted system may be proposed as an alternative.
2. Provide FMS servers, task computers, workstations and all ancillary equipment with sufficient power, capacity and communication bandwidth to meet functional performance demands of PARCS software without loss of responsiveness to user input or slowing of any end node device or workstation.
3. Provide separate workstations with monitor, keyboard, processor and printer in parking office.
4. Meet performance recommendations of software vendor and accommodate for growth and expansion as specified herein without any specified function being slowed or delayed by performance of any other function or task.
5. Application server should support Windows Server 2012 R2 or later.
6. Database server should support SQL Server 2012 R2 or later
7. Management/monitoring workstations should support Windows 7 or later.
8. Browser based application components should support IE 11 or later.
9. Parking management controller (hardware) should accept RJ-45 cable for 10/100/1000 Ethernet connection to management server
10. Parking management controller (hardware) should allow use of TCP communication protocols
11. System should allow store and forward communications with management server during lost communications
12. Within parking garage, locate communications closet to terminate incoming fiber/copper connections, and mount securely keyed wall racks for switches and patch panels.
13. System back up in less than three hours.
14. Report generation at a minimum of 35 pages per minute.

C. Data Storage:

1. Reside and operate on an ANSI SQL-compliant relational database server product.
2. Incorporate integrity controls to enforce three types of integrity:
   a. Entity integrity ensures no duplicate keys within a table and all non-null tables are populated.
   b. Relational integrity ensures no orphan keys, that all transactions properly deleted children entities, and properly modified parent references.
   c. Domain integrity ensures all attribute value ranges are enforced.
3. All transaction records including but not limited to Revenue Control System and Access Control System stored as actual data, not in report format.
4. Archive data in a format readable by report generator.
5. On-line data storage capacity to store a minimum of 24 months of system data.
6. Archive data automatically every six months with first archive after first 18 months, so that server always has most recent 12 months of data.
   a. Be redundant.
   b. Archive or restore transaction database in less than one hour.
   c. Use redundant on-line storage such as Level 1 RAID Technology.
7. Either periodically or on demand, FMS downloads and sends electronically, revenue reports for integration into Owner's financial department via TCP/IP connection to designated computer network in Microsoft Excel or approved equivalent.

D. Licensing

1. Supply all required operating system and application software licenses in sufficient quantities to accommodate number of users and equipment in installed system.

E. Security
1. Utilize protocols and passwords that prevent unauthorized access to software and hardware and manipulation of data and reports, including individual transactions.

2. Include minimum of 4 levels of access authorization to all operational, administrative and reporting functions and provide the following security features:
   a. Define individual user and group based security.
   b. Ability to assign a unique user ID and password for each person authorized to use system.
   c. Ability to establish an expiration period for passwords and periodically change that password for each authorized user ID.
   d. Ability to disable a user ID following successive log-on failures exceeding a specific limit.
   e. Ability to view and report user and group level security rights and create user-defined fields.
   f. Ability to de-activate codes for former users and internal and external customers.

3. PARCS vendor to provide any network security devices to allow installation per the system's current PA-DSS Implementation Guide.

4. Password protected FMS subsystems to restrict access to individual functions of each subsystem:
   a. Revenue Control System Monitoring, Control and Reporting.
   b. Access Control System Monitoring, Control, and Reporting.
   c. Occupancy Monitoring and Reporting.
   d. Equipment Monitoring and Reporting.

F. Occupancy Monitoring: Provide the following functions.

1. Every vehicular entry and exit lane serves as a counting location, equipped with vehicle detection devices.
   a. Each entering vehicle subtracts a count of one from number of available spaces.
   b. Each exiting vehicle adds a count of one to number of available spaces.

2. Track and display the number of available parking spaces on computer monitor(s).

3. Provide two programmable thresholds for each parking area:
   a. One threshold to trigger “full status”. When full status is reached count system operates in one of two modes, selectable by user.
      I) Mode one signals an alarm and relies on human intervention to activate appropriate dynamic signs and gate status changes.
      II) Mode two automatically activates appropriate dynamic signs and gate status changes but allows for manual overriding of “full status”.

b. Second threshold triggers "open status". The two operating modes described above also apply to "open status" threshold.

4. Ability to automatically disable ticket dispensing function when facility is full, but allows for manual override.

5. Ability to activate any and all electronic signs, individually controlling each facility or zone within a facility, including "FULL" signs and lane control lights provided by PARCS Contractor, as well as "FULL" or capacity signs provided by others, including existing Open/Full signs as deployed on the City roadways (manufactured by Daktronics, model MF-1002).

6. Ability to maintain and display separate counts for each facility or zone within a facility, each with total occupancy or spaces available, total Revenue Control System and Access Control System occupancy and total Revenue Control System and Access Control System spaces available.

7. Ability to maintain for each entry and exit lane:
   a. Non-resettable counters tracking monthly, transient and total parking patron usage.
   b. Counts of illegal/opposite direction entry/exit for each lane.
   c. Vends, vehicle detector and gate counts.

8. Ability to store lane, facility and zone counts at hourly intervals in daily files for specialized reports to analyze lot utilization and activity levels.

9. Transaction Counts: Provide, display and compare separate counts related to each lane:
   a. At entry lanes: Ticket dispenser count plus Access Control System count compares with directional lane count and gate count.
   b. At exit lanes: Exit verifier transactions plus Access Control System count compares with directional lane count and gate count.

G. Reversible Lane
   1. System must accommodate a single drive lane that can be set by a manager as either an entrance or exit lane with a single switch on the FMS.
   2. Integration of lane reversal shall include Entrance and Exit Stations, gates and dynamic signage.

H. Equipment Monitoring: Provide the following functions.
   1. Monitor operational status of all entry and exit lanes and Automated Payment Machines.
   2. Warning alarms displayed and tracked through FMS for the following conditions:
      a. Lane status; open or closed.
      b. Gate failure.
      c. Gate up.
      d. Low-ticket supply.
      e. Ticket in throat.
      f. Illegal entry or exit (reverse direction through lane).
      g. Back-out ticket.
      h. Ticket jam.
i. Vehicle detected in lane for longer than 30 seconds without initiating transaction.

j. Count status.

k. Passback violation.

l. Automated Payment Machine tampering.

m. Automated Payment Machine door status, open or closed.

n. Automated Payment Machine receipt paper status.

o. Automated Payment Machine note and coin vault status.

3. Visual and audible abnormal status alarms at each computer workstation.

4. When an alarm is turned off, visual and audible signals stop at all workstations.

5. A daily log report identifying all system alarms.

6. Monitor electrical circuits and frequency of operational errors in components to identify maintenance actions to prevent failure of a component.

2.2 REVENUE CONTROL SYSTEM:

A. FMS Interface: Provide the following functions in concert with the FMS.

1. Remote programming of all devices that process Revenue Control System transactions.

2. Testing of fee structure against existing facility usage statistics.

3. Uploading and consolidating reports from all devices processing Revenue Control System transactions.

4. Retrieval and review of all transactions, based on user-defined parameters.

B. Reports: Provide the following reports which can be displayed on a monitor, printed on a printer, converted to an ASCII file and are sortable chronologically and by shift or lane.

1. Daily Event Log - A listing of changes to system and users who made changes, including print communication messages, facility lane equipment alarms, remote gate opening, and system log on/offs.

2. Daily Transaction Report – A daily summary of all transactions processed at each Automated Payment Machine, including entry time, transaction time, payment amount and type.

3. Field sortable entry lane counts (equipment “vend” for Entrance Station, Access Control System, gate, activation loop, and closing loop counts.

4. Field sortable exit lane count totals (equipment "vend" for Exit Station, Access Control System, gate, activation loop, and closing loop counts).

5. Revenue Alarms Report – Provide report to include at a minimum remote gate vend and manual gate open counts.

6. Monthly Lane Volume Report - Provide entry and exit counts by date. This report is used for management planning and statistical information.

7. Monthly Duration Report - Provide duration of stay based on patrons' elapsed parking time and patron time of entry. This report is utilized in rate structure and facility usage analysis, management planning, statistical information, rate analysis, and revenue analysis.

8. Ticket Sequence Report – Provide a complete sequence of transactions related to individual tickets (i.e., information about how and when a ticket was issued tied to how and when fee was paid and ticket was processed).
9. Monthly Ticket Value Report - Provide ticket stratification based upon value of all transactions processed. Provide breakdowns for each rate structure. This report is used for revenue analysis, rate analysis, management planning, and statistical information.

10. Outstanding Ticket Report – Provide a listing of tickets that have been issued but are not yet processed at an exit. FMS receives data on each Access Control System transaction from Access Control System controller, adding it to transaction log and consolidating it into daily activity reports.

11. Be capable of retrieving from transaction data base information for ad hoc reports on Access Control System activity.


C. Revenue Control System Credential: Magnetic stripe or Bar code

D. Rate Structure:

1. A minimum of (25) different fee structures.
2. Each fee structure has the ability to program a minimum of forty fee increments.
3. Automatic adjustment for daylight saving time and leap year in fee calculations.
4. User defined maximums (12-hour, 24-hour, etc.)
5. Provide for:
   a. Day, evening and night rates.
   b. Weekend rates.
   c. Flat rates.
   d. Event rates.
   e. Holiday rates.

6. User defined grace time parameters
   a. Exit grace time.
   b. Turnaround grace time.
   c. Elapsed grace time – to allow for elapsed time from payment at a central location, retrieve vehicle and drive to exit lane.

E. Credit and Debit Card Processing:

1. Selectable acceptance the following types of credit card payments:
   a. VISA
   b. Master Card
   c. American Express
   d. Discover
   e. Bank Debit Cards with Credit Card logo
   f. Ability to turn off acceptance of one or more types if needed.

2. Selectively accept POM Meter stored-value smartcard as an alternative payment method on any device that accepts credit cards for payment.
3. Utilize credit and debit card acceptance hardware, software, and other system components that are PCI DSS and EMV compliant:

a. PCI-DSS Compliant Systems: For all devices and systems that are in scope of PCI-DSS compliance as defined within the latest version of PCI-DSS, provide verifiable proof that all such devices are either:

1. A currently validated PA-DSS Application, suitable for new installations, as listed at the PCI-SSC web site
2. Part of a Level-1 Audited Service Provider payment system. Suitable proof must be a listing on the VISA or MasterCard Service Provider web site, or an audited and signed Attestation of Compliance (AOC) showing a successful Service Provider Audit performed by a Qualified Security Assessor (QSA).

b. For EMV readiness all devices that accept a payment card must accommodate P2PE EMV payments with one of the following levels of readiness. Devices that are not EMV upgradeable or ready will not be accepted:

1. Device is fully ready to accept P2PE EMV payments.
2. Device is completely hardware-ready to accept P2PE EMV, but will require a software update after it is installed.
3. Device has an upgradeable chassis that will seamlessly accept P2PE EMV hardware, and may also require a software update.

c. Provide a list of each type of EMV-eligible device to be provided, and list its status using one of the descriptions, above.

d. Provide a list of all available options for Payment Processors and Gateways that may be selected to support EMV processing.

e. All attended devices (where an employee facilitates the transaction) must have a PCI-approved EMV PIN-pad included. All unattended (automated) devices (PIL, POF) may have a PIN pad, but it is not required.

4. Configure system such that information from each credit card transaction is transmitted to a server in direct communication with authorizing clearinghouse to provide on-line real time approvals.

5. Maximum authorization time from patron confirmation to clearinghouse authorization is five (5) seconds for mag-stripe transactions and ten (10) seconds for EMV transactions.

6. Confirm and provide record formats required by Owner’s financial institution.

7. Print receipts with a signature line only when amount is greater than a minimum fee, established by Owner, or if credit card information was entered manually.

8. Offer Credit Card In/Credit Card Out option:

a. Ability to activate/deactivate from FMS.
b. Provide the following operational sequence.

1) Entrance Station prompts patron to swipe/insert credit card or take ticket.
2) Patron swipes/inserts credit card.
3) Upon successful read of credit card, data is sent to FMS, which sends signal to open gate.
4) Patron retrieves credit card and proceeds through gate.
5) If unsuccessful read, patron is prompted to try another card, take ticket, or press intercom for assistance.
6) Upon exit, patron swipes/inserts the same credit card that was used to enter.
7) Upon successful read of credit card, data is sent to FMS for correlation with original entry data. Fee is calculated and payment is processed.
8) If credit card cannot be processed patron is advised to try another card or to press intercom button for assistance.
9) Upon receiving credit card authorization, patron retrieves card and is offered a receipt option by audible and/or visual means. If elected by patron, receipt is provided with date, time and location of entry; date, time and location of exit; last four digits of the credit card used; and the fee charged.
10) Signal is sent to open gate.

F. Validation System

1. Allow up to 999 validation accounts to be programmed within FMS. Each account to include a unique account number and allow validations based on use, time or dollar value.
2. Allow all validations to be reported and sortable by time, date, origin, and use.
3. Patrons with a validated ticket bypass POF, proceed directly to exit and insert validated ticket at Exit Station.
4. Web-Based Billable Validation
   a. Tenant or operator logs into a password protected account via computer, smartphone, or other web-enabled device.
   b. Ticket number is entered, plus any adjustment in “standard validation.”
   c. Barcode scanner option for validating barcode tickets (rather than entering ticket number).
   d. Ability to use paper or mobile barcode or QR code validations.
   e. Software tracks and stores user ID, ticket number and validation amount for billing purposes.
   f. Validation billing software calculates and prepares monthly invoices.
5. Chaser Ticket Validation
   a. Provide pricing for purchasing pre-encoded chaser tickets.
   b. Patron inserts chaser ticket at the Exit Station after the fee is displayed.
   c. Chaser ticket usage is recorded for billing and reporting purposes.

G. Entry Station:

1. Independently and in concert with FMS, issue time and date stamped ticket.
2. Machine readable encoding that is compatible with all other Revenue Control System components.
3. Capable of operating while disconnected from FMS.
4. Minimum capacity of 5,000 tickets with hands-only (no tools) ticket loading.
5. Independent ticket dispensing mechanism that is removable as a single unit.
6. Easily readable display screen and audio welcome message such as “Please Press Button for Ticket and “Please take ticket”.
7. Capable of maintaining a minimum processing rate, in combination with gate and other in-lane equipment, including typical patron delays, of 400 transactions per hour for push button operation and 450 transactions per hour for auto-dispensed operation.
8. Integrated proximity card reader
9. Operational Descriptions:
   a. for Normal Revenue Control System Patron Entry
      1) Upon vehicle detection, send a signal to the Entrance Station to issue a machine readable time and date encoded ticket automatically or at the push of a button by patron.
      2) Upon removal of the ticket from Entrance Station, send a signal to open the gate and send transaction data to FMS.
      3) The use or detection of an Access Control System credential does not allow the above sequence to occur.
   b. Back-out Ticket Taken: Ticket is removed from Entrance Station and directional sequence is violated (i.e. vehicle backs out of entrance without entering)
      1) Sound an audible alarm at the FMS
      2) Report ticket issued as an invalid back-out ticket and post to the daily transaction exception log
   c. Back-out Ticket Not Taken: Ticket is left in the Entrance Station and directional sequence is violated (i.e. vehicle backs out of entrance without entering)
      1) Abandoned ticket is ingested back into Entrance Station, rendered invalid, and discarded into dedicated holding bin.
      2) Event posted to daily transaction exception log.
   d. Full Status
      1) Revenue Control System manually or automatically disables ticket dispenser and CC reader at all entry stations when count system considers facility to be full.
      2) Easily readable display screen and audio message such as “Sorry, the garage is full”.
      3) Revenue Control System reactivates ticket dispensing function when count drops below a programmable threshold.
      4) Access Control System patrons are allowed access even when ticket dispensing is disabled.

H. Exit Station:
1. Independently and in concert with FMS, read ticket data to determine ticket validity, payment due and any encoded validation.
2. Include the following integrated components:
   a. Processed ticket vault.
   b. Easily readable display screen and audio message such as “Please Insert Ticket”.
   c. Audio and visual instructions displayed to patrons.
   d. Integrated intercom
   e. Integrated credit card reader.
   f. Integrated proximity card reader
3. Capable of maintaining a minimum processing rate, including typical patron delays and in combination with gate and other in-lane equipment, of 400 transactions per hour.
4. Maximum elapsed time from insertion of validated ticket until gate opens is three seconds.
5. Operational Description
   a. Upon detection of a vehicle, display screen audibly and visually prompts patron to insert ticket into Exit Station.
   b. For fully paid or validated tickets, send signal to open gate and send data to FMS. Retract ticket into Exit Station and retain for audit purposes.
   c. For tickets that are not fully paid/validated or if grace period has expired, prompt patron to pay remaining fee via credit card or contact staff via intercom.
   d. Send signal to close gate after vehicle has passed closing vehicle loop or sensor.
I. Portable Cashier function: A proximity card or handheld unit programmed to conduct cash, credit card or lost ticket transactions in an unstaffed/unequipped exit lane.
   a. Staff responds and uses ID (proximity card or hand held wireless device that communicates with Entrance Station, PIL and/or FMS).
   b. Staff takes appropriate action with ticket based on system and status of transaction including initiating lost ticket transaction, reinserting ticket into device, etc.
   c. Customer pays attendant with cash or if handheld unit is employed, customer may also pay with credit card.
   d. Lane equipment and/or FMS recognizes payment and opens gate.
   e. System software tracks transaction and ties transaction to the staff member who collected the funds.
J. Pay-on-Foot Station (POF)
   1. Independently and in concert with FMS, read ticket data to determine ticket validity, payment due and any encoded validation.
   2. If payment is due, display amount due and request payment by cash or credit card.
      a. Accept U.S. paper money in any combination of one, five, ten and twenty dollar denominations.
b. Include a separate safe or vault in banknote acceptor.
c. Dispense change using highest denominations possible.

3. Upon receipt of payment, issue machine encoded ticket, with programmable grace period.
4. Provide concise instruction with pictograms where appropriate for user-friendly operation.
5. Provide clear, audible instructions to patron throughout transaction process.
6. Include high security lock system with appropriate alarm contacts for tampering.
7. Capable of maintaining a minimum processing rate, including typical patron delays, of 100 cash transactions per hour.
8. Operational Description
   a. Patron inserts ticket into POF.
   b. For valid tickets, fee is displayed. Patron inserts cash or credit card and payment is processed. Change is returned to patron if needed or credit card transaction is processed.
   c. Amount paid, transaction number and other data are printed on ticket in readable form and encoded on ticket. All data is sent to FMS.
   d. Patron is advised audibly and visually to take ticket and proceed to vehicular exit.
   e. Receipts are issued only upon patron request for all transactions.
   f. If POF cannot read ticket or it is otherwise identified as an exception transaction an alarm is sent to FMS, ticket is returned to patron, and a visual and audible message advises patron that transaction cannot be processed and to press intercom for assistance.

2.3 ACCESS CONTROL SYSTEM:

A. FMS Interface:

1. Provide an on-line, computer-based access control system for those authorized by Owner to have access to parking facility without being processed through ticket system, for example; a “monthly parker”.
2. Distributive, networked or centralized processing may be employed, so long as required multi-lane control features such as anti-passback, occupancy and activity tracking are maintained. Employ Proximity readers as specified herein for access for the following distinct user groups:

   a. Authorized vehicles requiring free and fast ingress and egress to parking facilities.
   b. Monthly parkers who have a contractual agreement and/or will prepay or prearrange billing for parking on a monthly basis.
   c. Frequent parkers, who prepay or prearrange billing and are charged for parking at fees equal to, or discounted from public parking fees. Includes:
     1) Smart cards with a prepaid balance that declinates/decrements with each use:
a) Upon use at entrance, verify balance and advise patron if preprogrammed low balance has been reached via red light or audible message.

b) Upon exit, calculate fee due and display balance left on card after transaction. If fee exceeds balance send alarm to FMS and advise patron to pay balance via credit card or press button for assistance.

3. Individually recognize and process up to ten-thousand (10,000) Access Control System users at all reader locations.

4. Have at least sixteen (16) preprogrammed access levels capable of being changed without reprogramming of Access Control System.

5. Provide anti-passback control. With this feature, users enter and exit in proper sequence (i.e., entry, exit, entry, exit, etc.).
   
a. Selectable option to allow either "hard" (out of sequence user is rejected and an alarm is generated at Access Control System controller and FMS) or "soft" mode (out of sequence user is allowed access but reported.)
   
b. In both hard and soft modes, each out of sequence event is reported as an exception transaction in daily Access Control System access log.
   
c. Password protected "resynchronization" of all users to one access before return to anti-passback control.

6. Link users to each other to allow one entity to be identified with and/or pay for a group of users. Provide up to one-hundred (100) such Access Control System groups.

7. Ability to group Access Control System cards and limit access to a preset maximum number of cars in facility at any given time, and/or allow and track overages to be invoiced separately.

8. Nesting feature:
   
a. Ability to require parkers that are assigned to park in a specific level or area (nest area) to use Access Control System credential to enter and exit nest area in order to exit facility.
   
b. Required sequence: In facility, in nest, out of nest, out of facility.

9. Central Access Control System controller requirements:
   
a. Issue and reprogram ID devices.
   
b. Allow authorized supervisor to create, store, send and receive user programming from Access Control System readers. Password protected access to programming, with multiple levels of access, to any and all information regarding specific blocks and/or suites of cards.
   
c. Provide a database for Access Control System management including the following:
      
      1) Provide at least twenty (20) programmable record fields for each person issued an Access Control System credential and at least twelve (12) programmable record fields for each user’s vehicle(s).
      
      2) Allow specific parker record files to be retrieved, displayed and/or printed based on selectable criteria, such as current Access Control
System status, access group, access level, and/or ID numbers (except data that is password protected).

3) Allow searching, sorting and printing of database by any field for routine and special forms such as invoices or mass-mailings.

4) Consolidating and retaining data to allow for report generation. The following are minimum required reports, viewable on a workstation monitor and/or printable on demand:

a) Activity Usage Reports – Provide a chronological list of Access Control System usage, including date, time, credential, and location of entries and exits; capable of being sorted by any field.

b) Count Reports – Monitor and report counts of Access Control System vehicles present on an hourly basis by group, access level.

c) Percentage of Occupancy – For selectable times during 24 hour period for all categories of Access Control System parkers.

d) In/Out Status Report: Shows status of all Access Control System cards at any given time, sortable by name/card #/status.

e) Active User Report – A listing of all active users that have access to the facility.

f) Activity Exceptions Report – A field-sortable listing of all activity exceptions to include at a minimum hard-passback, soft-passback, shared account, debit card, hotel quest pass and nesting violations.

g) User Changes Report – Provide report of changes to user accounts to include at a minimum debit card rate changes and status changes (e.g. card placed in neutral with no charges applied at exit).

a. Capable of reporting the collection of fees from parkers on monthly prepayment, declining, decrementing, end of month billing, and/or credit card basis.

b. Monitor and report revenue associated with Access Control System to FMS. Separate revenue by type of payment (prepayment, declining, decrementing, monthly billing and/or type of credit card) and indicate Access Control System ID device number(s), account number(s), and month(s) for which payment was received.

c. Provide for posting of payments and automatic lockout of Access Control System users within programmable grace period after expiration of a prepaid account.

d. Provide automatic on-line real-time monitoring of Access Control System usage with DVD/CD-ROM storage of transaction data for audit and analytic purposes.

e. Monitor and report all alarm conditions to FMS.

f. Password protection and Daily Log reports for all administrative actions.

B. Readers
1. Housed in a weather proof, harsh environment enclosure rated NEMA-3R or greater.
2. Where required to be pole mounted, mounted on a steel pole and installed per manufacturer’s suggestions.
3. Operational Description
   a. Access Control System reader identifies Access Control System credential device in lane and searches for authorization through Access Control System Controller. If authorized, a signal is sent to open the gate.
   b. Where Access Control System lanes are also equipped with Entry Stations or Exit Stations, activation of reader automatically disables dispenser/verifier. Likewise, the initiation of a ticket entry/exit transaction automatically disables Access Control System.

4. Proximity Card System
   a. Passive credential design capable of being read within 6 inches of reader.
   b. Minimum accuracy of card reader: 99%.
   c. Read and process credential within one second of presentation to reader.
   d. In combination with gate and other in-lane equipment, Ability to maintain processing rate of 600 transactions per hour for at least four continuous hours of operation, including normal patron delays.
   e. Checking protocol that identifies multiple reads of same card within a few seconds (due to users “waving” card in front of reader), correcting false anti-passback reads.
   f. Protection from common and/or local sources of interference - Unaffected by neighboring electronic systems or electronically controlled devices.
   g. When paired in-lane with any Revenue Control System device, card reader mounted to face plate of Revenue Control System device (ticket dispenser, exit validator, POF etc.).

2.4 CONTROL GATE
   A. Provide an effective barrier to vehicles entering or exiting facility.
   B. Distance between end of extended gate and curb or wall is restrictive to motorcycles.
   C. Closed gate arm height of approximately three feet unless noted otherwise on drawings.
   D. Use articulating gate arms in areas of limited headroom.
   E. Employ breakaway design that can be easily replaced when broken away from housing.
   F. Provide safety feature of rising upon contact with vehicle or person without causing damage or injury.
   G. Incorporate in one housing all necessary components for functioning of unit.
H. Provide circuit breaker protected gate motor and components designed for heavy-duty use.

I. Provide corrosion resistant parts.

J. Provide gate controller that prevents damage when gate motion is blocked in any position and cannot be opened or closed by force applied to gate arm.

K. Allow for adjustment of gate arm travel.

L. Gate Controller features:
   1. Microprocessor controlled over-the-network activation and communication for gate status and functions from FMS.
   2. Separate momentary contact closures for each of the following counts:
      a. Access Control System patrons
      b. Revenue Control System patrons
      c. Vehicle entries
      d. Vehicle exits.
   3. Directional logic with electronic outputs to alarms, counters and to report atypical lane activity to FMS.
   4. Ability to store at least three vend inputs and sequentially process each vend.
   5. Ability to test gate operability and controller programming on-site without use of special diagnostic equipment.
   6. "AUTO-MANUAL" switch, and "ON-OFF" switch for gate.
   7. Contains power supplies, dust-proof relays, and other circuit components to control gate.
   8. Provide remote gate arm activation (with sufficient line of sight or CCTV camera coverage).

M. Control Gate Usage Restrictions:
   1. Provide signage prohibiting pedestrians and motorcycles from utilizing control gate as a means of ingress or egress to facility.
   2. Provide along approach route of automated gate and/or affixed to both sides of control gate arm.
   3. Incorporate both text and graphics to convey hazards of not meeting this restriction.

2.5 VEHICLE DETECTION

A. Incorporate/employ anti-tailgating logic, vehicle inductive profiling, and self-tuning technology.

B. Maintain peak sensitivity regardless of temperature, rain or other environmental conditions.

C. Fit within entry and exit controllers, or gate housings, or in remote lane/ramp controller cabinet.
D. Detect vehicles that back out of lane resulting in a back-out or stolen ticket and report to FMS.

E. Provide indicator light on front panel indicating presence of vehicle.

F. Require no special tools or meters for adjustment following initial installation.

G. If tied to inductive loops, provide multiple loop tuning to prevent crosstalk or interference between loops in close proximity of each other.

H. Provide directional logic using “A-B” logic as follows:
   1. Sensor “A” activates lane device for Revenue Control System or Access Control System operation.
   2. Following Revenue Control System or Access Control System operation, gate opens.
   4. Sequence of Sensor provides directional logic.
   5. Activation of Sensor “A” without Sensor activation at “B” results in an incomplete transaction.

I. If using Inductive Loops as sensing device:
   1. Cut-into paving surface and filled with manufacturer’s approved sealant (see drawings).
   2. Be formed by three to four turns of 16-gauge XLPE single-conductor wire.
   3. No splices are permitted.
   4. Contain loop leads:
      a. Limited to a length of 100 feet.
      b. Have a four-twist minimum per foot and located at a minimum of 18 inches from electrical power lines.
      c. Be contained in separate conduit to prevent interference from electrical signals.

2.6 INTEGRATED SIGNAGE

A. Lot Full Signs: Single message LED signs display “OPEN” or “Full” at garage entrance, activated automatically or manually via FMS.

B. Traffic Controller Signs:
   1. Red “X”/ green arrow LED signs to advise patron if lane is open.
   2. Ceiling mounted where possible or as shown on plans.
   3. Activated automatically or manually via FMS.

2.7 INTERCOM SYSTEM
A. Fully digital, microprocessor based, modular design utilizing VoIP (Voice over Internet Protocol).

B. Programming server for all intercom features performed through networked workstation or from intercom master station.

C. Programmed configuration of intercom stations and system features stored in non-volatile memory.

D. System includes all software and hardware required for programming system, including:
   1. Individually programmable volume control for each intercom station.
   2. Substations programmed to call intercom master station.
   3. Call forwarding feature for individual stations or all stations to re-direct calls to another designated master station or substation.
   4. Allow conferencing for an unlimited number of stations from master station.
   5. Include ability to announce up to 50 pre-recorded messages at intercom stations, selectable based on programmed criteria, or manually.
   6. Announced messages and audio input broadcasts may be interrupted only at affected intercom station during intercom calls and return automatically upon completion of call.
   7. If master station is busy, system automatically announces pre-recorded message at calling station, when master station disconnects, another pre-recorded message directs station to re-initiate call.

E. Master station desktop model with LCD-Display (8 lines x 14 characters minimum) and gooseneck noise cancelling microphone designed for high-noise environment. Required features:
   1. Provide full-duplex hands-free conversation with any other selected individual station or combination of stations in system.
   2. Integrated amplifier and loudspeaker.
   3. Connector and external noise cancelling headset.
   4. Firmware/feature upgrades available via download through intercom server with no local modification on station required.
   5. High sensitive microphone to provide clear conversation from a maximum range of at least 20 ft.
   7. Intercom station directory panel with direct access, pre-programmable function menus, selectable language, and adjustable display contrast.
   8. “Handset function” enabling user to switch from loud-speaking, gooseneck microphone operation to handset mode.

F. Substation requirements:
   1. Microphone, loudspeaker and in-use LED, all housed in one unit with configurable front pushbutton control.
   2. DSP technology to provide full speaker/microphone supervision and fully adjustable (volume/timing threshold programmable via intercom server) audio monitoring.
3. Feature upgrades via download through intercom server with no local modifications required.

PART 3 - EXECUTION

3.1 TRAINING

A. No actual training is to be provided for this RFQ. Only a training plan is requested.

END OF SECTION 111233

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